case report

Topical steroid-induced Cushing syndrome

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Topical steroids are widely used by dermatologists and other physicians to treat skin diseases. Although mostly useful, these medications are not without risks, especially when abused or overused by patients or parents. We report the case of an infant who developed Cushing syndrome due to clobetasol propionate 0.05% (Dermovate, GlaxoSmithKline) ointment used by his mother to treat diaper psoriasis.

CASE

An 11 month-old Saudi boy was referred to our care in the dermatology clinic because of resistant diaper eruption since the age of 4 months. At this age, the mother consulted a local pharmacist and she was dispensed clobetasol propionate 0.05% (Dermovate) ointment, which was used liberally albeit intermittently for 7 months. On examination, the child was cushingoid with moon face and had hypertrichosis on sideburns (Figure 1) with a bodyweight above the 95th centile and height at the 95th centile. Blood pressure was normal. Examination of the diaper area revealed sharply demarcated bright red plaques involving both inguinal folds and adjoining parts of both upper thighs (Figure 2). Multiple linear stretch marks were seen in both groin folds. The rest of the examination was normal. The diagnosis was infantile diaper psoriasis in addition to iatrogenic Cushing syndrome induced by exogenous topical steroids. This was supported by an undetectable basal morning cortisol level (<5 nmol/L). Maintenance oral hydrocortisone was not started, but was recommended during acute infections until complete recovery of adrenal function. Because of a diaper psoriasis flare when Dermovate ointment was discontinued a few days previously by the referring physician, the mother was instructed to use topical 1% hydrocortisone and miconazole combination cream (Daktacort, Janssen-Cilag) in

Figure 1. Cushingoid face and sideburn hypertrichosis.

Figure 2. Sharply defined red psoriatic plaques in the diaper areas.

addition to pimecrolimus (Elidel, Novartis) cream sparingly only when redness appeared and to discontinue when redness disappeared. Generous use of emollient was maintained at all times. On review 8 weeks later, his cushingoid features were regressing and his basal morning cortisol concentration has normalized to 259 nmol/L. The diaper psoriasis had cleared and was maintained under control with Daktacort and Elidel creams use as needed whenever active.

DISCUSSION

The therapeutic use of the anti-inflammatory properties of glucocorticoid compounds including topical preparations is widely practiced for different indications including skin diseases. While mostly useful, steroids have the potential to cause side effects including iatrogenic Cushing syndrome.[1] In the majority of cases this results from oral or parenteral administration, but topical application of potent topical steroids can induce Cushing syndrome, as well as the suppression of the hypothalamic-pituitary-adrenal (HPA) axis.

Topical steroids are available in different vehicles such as ointments, creams, and lotions with ointments being the most potent preparation for any particular compound. Topical steroid potency is variable and ranges from low potency to superpotent with clobetasol propionate 0.05% (Dermovate) being the most potent topical steroid available. The lack of awareness of side effects of topical steroids and the underestimation of their adverse effects can result in severe and even catastrophic consequences. Frequently, patients and parents of children have little or no reservation to obtain and use them, without prescription, from pharmacies or even friends and relatives.

Systemic absorption of topical steroids are known to occur; there are many reports of such occurrences.[1-3] Children can absorb a proportionally larger amount of topical steroids because of the higher body surface area-to-weight ratio.[2] In addition, other factors may enhance the absorption of topically applied steroids. These include thin skin as in the eyelids or occlusion as seen in body folds, including the diaper area. Side effects of topical steroids can range from local to systemic. Local effects include skin atrophy, telangiectasia, striae, hypertrichosis and increased cutaneous infections. Systemic adverse effects include the suppression of the HPA axis and potentially all other known adverse effects of systemic steroids including osteoporosis, obesity, hypertension, cataracts and cushingoid features.[1]

Cushing syndrome refers to a group of signs and symptoms that develop as a result of either endogenous overproduction or exogenous treatment with adrenal corticotropin hormone (ACTH) or hydrocortisone and its analogs. Cushing syndrome usually presents insidiously with growth failure, generalized obesity, and a rounded face with prominent cheeks and flushed appearance, which is referred to as a moon face. Centripetal fat accumulation leads to buffalo hump. Cutaneous stigmata of steroid overuse may also be apparent as facial acne, striae and hypertrichosis. The complete blood count may reveal the presence of polycythemia, lymphopenia and eosinophilia. Serum electrolytes are

usually normal but hypokalemia may be seen with or without hyperglycemia. A more specific test to document Cushing syndrome should be done based on the possible etiology. Exogenous glucocorticoid intake can be suspected by careful history and then confirmed by low levels of plasma ACTH, morning serum cortisol, and 24-hour free urinary cortisol excretion.

To avoid side effects of topical steroids many measures must be implemented, particularly in children. First, a correct diagnosis must be established to confirm the responsiveness to topical steroids. Second, steroid-sparing measures must always be implemented, if possible, to minimize topical steroid consumption. These include emollients and other agents. For psoriasis these include a topical vitamin D analog like calcipotriol and topical calcineurin inhibitors like pimecrolimus. In addition, a minimally potent preparation should always be used whenever possible. Only preparations containing 1% hydrocortisone acetate are allowed on the face, genitalia and body folds for most indications. Lastly, short courses with drug holidays in between should be encouraged to allow for skin recovery and remodeling.

In conclusion, we report an infant with diaper psoriasis who developed Cushing syndrome due to the abuse of topical steroid ointment. This case emphasizes that topical steroids are useful, but they are not without risks. Judicious use is needed to avoid their side effects.

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